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IN THIS ISSUE

CANADIAN AGRICULTURAL POLICY

THE AGRICULTURE OF NORTHERN LIBYA

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By Montell Ogdon*

Economic controls set up by the Canadian Government have proved to be useful mechanisms for stimulating the production and delivery of agricultural commodities needed in the war effort. An important question now being asked by the Canadian agricultural producers is whether markets and prices for their products will be allowed to collapse in the post-war period. The Government is giving attention to ways and means of cushioning the impact on the country's agricultural producers of the inevitable post-war shifts within the pattern of world markets for agricultural products. Canada has cooperated closely with the United States and the other United Nations in agricultural matters during the war. Continued intergovernmental cooperation with respect to food and agricultural problems is included in Canadian post-war plans.

PRE-WAR POLICY

Governmental assistance to Canadian agriculture during the 1920's and 1930's included tariff protection, extension of credit to agricultural producers on favorable terms, a rehabilitation and farm-assistance program for the Prairie Provinces, and subsidization of wheat marketing (12).¹

Import Duties

The policy of making official valuations for the assessment of import duties (4, pp. 480-494) on specified commodities, mostly fruits and vegetables, became effective in Canada in September 1926, by legislation under which the amount of duty collected could be stepped up so as practically to exclude imports during seasons of the year when Canadian products were coming on the market. Revision of the tariff in May 1930 resulted in increased customs charges on fresh, dried, and canned fruits; fresh and canned vegetables; grains and milled products; meats; egg products; and various miscellanies. The Government in 1930 was also given broad powers to impose arbitrary valuations and drastic antidumping duties by ministerial decree and to levy high duties on imports from countries with depreciated currencies. In 1931 a still more general and drastic upward revision of import duties was made.

By adoption of agreements, growing out of the Ottawa conference in July and August 1932, Empire preference was given a more prominent place in Canadian policy. United States export trade in farm products was materially affected by some of the concessions made, particularly by the preferences given by the United Kingdom to Canada on wheat, pork products, and tobacco, and the preferences conceded by Canada to Australia in the matter of dried and canned fruits.

Under the trade agreement of November 1935, the United States and Canada made a number of reciprocal reductions in import duties, and Canada granted most-favored-foreign-nation treatment to the United States, with no modification of Empire preference. New rates were established on fruits and vegetables entering Canada. In addition, Canada agreed to amend the Customs Act to eliminate certain features of the arbitrary customs valuations and, especially, to reduce by at least 20 percent the

¹Office of Foreign Agricultural Relations. Credit is due Dr. Clifford C. Taylor, agricultural attaché, Ottawa, for much of the information used in this article and Miss Emma Doran, formerly of the Office of Foreign Agricultural Relations, particularly for preparing the section on Operations of Wartime Commodity Boards.

¹ Italic figures in parentheses refer to Literature Cited, p. 157.

special seasonal duties on fresh fruits and vegetables. In the new agreement of 1938 further concessions were made by Canada, including decreases in rates of duty, reductions in advanced seasonal valuations, shortening of the seasons in which advanced valuations are applied, and binding of several agricultural items on the free list. The benefit of the most-favored-nation treatment was enlarged when, in pursuance of the Agreement of 1938, the Canadian 3-percent excise tax was removed with respect to items on which Canada granted other concessions to the United States. This agreement represented a substantial modification of the British Empire preferential-tariff system (10).

Wheat Subsidies

Subsidization of Canadian farm exports during the inter-war period was largely restricted to the Dominion's major agricultural commodity, wheat. Additional relief was given Prairie wheat farmers under the Prairie Farm Rehabilitation, Prairie Farm Assistance, and the Prairie Farm Income programs.

Low prices and poor yields of wheat in the first half of the 1930's had brought acute distress in the Prairie Provinces. The Parliament therefore enacted a law in August 1931 that provided for payment of 5 cents per bushel to producers on all wheat grown in Alberta, Saskatchewan, and Manitoba during 1931 and delivered before July 31, 1932. The Dominion Government also appointed a manager of the Canadian Wheat Pool's central selling agency after the Pool ran into grave financial difficulties in its handling of the 1930 crop. This control continued until July 1935, when the Canadian Wheat Board was established and was empowered to make advances on wheat that farmers decided voluntarily to market through the Board.

Each year's crop has been treated separately, with wheat growers not responsible for any loss incurred on operations but participating in any profit realized.² Thus a mechanism was provided for an "export subsidy" on wheat when the advance payment was higher than the market price.

An advance payment of 87.5 cents per bushel was announced by the Board in September 1935, but the guaranteed price was above the market for only a part of the 1935-36 season. The 87.5-cent advance was continued during the 2 subsequent years, with the proviso that it would be effective only if the closing market price fell below 90 cents per bushel. The Board, however, was not called upon to handle any farmer deliveries from the 1936 and 1937 crops because of relatively high prices prevailing in world markets. With the drought cycle passed and a near-normal crop harvested in 1938, the market broke, and the Board advance was reduced to 80 cents per bushel for the 1938 crop. The market declined below this figure, and the bulk of the wheat was delivered to the Board, which ultimately incurred a loss of \$61,000,000 in disposing of the crop.

With the Board's wheat stocks greatly increased by deliveries from the 1938 harvest and the wheat market weak, the Government passed in 1939 the Wheat Board Amendment Act, which made two important changes in operating practices. The Board was relieved of the responsibility of determining the advance to be made to the farmer, the amount being fixed statutorily at 70 cents per bushel, effective for the 1939 crop. Deliveries by an individual farmer were limited to 5,000 bushels. Prices were below the 70-cent advance for the greater part of the marketing year, and the Board received most of the marketable surplus, with farmers generally delivering up to the 5,000-bushel limit.

Quality Premiums

In addition to the support given to wheat producers, the Canadian Government had also given consideration to other agricultural products prior to the war. The

² In event of loss, any deficit is transferred to the Dominion Government.

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Department of Agriculture made a survey of market conditions and eating habits in the United Kingdom, in order to determine how Canada might provide agricultural products best adapted to meet possible British demands. Thereafter steps were taken to encourage production of quality animal products, and since July 1, 1939, premiums have been paid on cheese, amounting per pound to 2 cents on 94-score and 1 cent on 93-score.

#### WARTIME ECONOMIC CONTROL

Four phases of Canada's basic program for wartime economic control particularly affect agriculture: (1) The agricultural-production program, (2) the price-stabilization program, (3) import controls, and (4) export controls.

The principal Canadian agricultural-adjustment problem of the war has been to reduce the production of wheat and to increase the output of livestock products and certain other commodities in short supply. Following the large crops of 1939 and 1940, Canada had the largest carry-over of wheat on record. With practically all the western European market cut off, storage space became seriously inadequate (8). Quota limitations were placed on deliveries during 1940-41 and again in 1941-42 (6, p. 6), and a program was introduced in 1941, under which payments were made to western growers for each acre of land taken out of wheat production. These amounted to \$2.00 per acre on land planted to other crops, or \$4.00 on that placed in fallow. At the same time the production of hogs and dairy products was encouraged.

The Agricultural Supplies Committee, which was created in December 1939, within the Department of Agriculture, and reconstructed as the Agricultural Supplies Board in May 1940, was authorized to direct and regulate the production and marketing of Canadian farm products other than wheat. This Board has coordinated the work of the several divisions of the Department of Agriculture and has worked closely with other agencies of the Dominion Government in developing and executing production programs designed to insure supplies of farm products to meet civilian requirements in Canada, to fill the contracts for delivery of agricultural supplies to the United Kingdom, and to meet other wartime needs. Conferences of Dominion and Provincial representatives were held in December 1942 and 1943, at which acreage objectives were respectively agreed upon for various crops and for numbers of livestock in the succeeding years. During its first 2 years the Board created a number of committees for safeguarding supplies needed in production, and in its third year (ending March 31, 1942) administrators were appointed for feeds, seeds, fertilizers, pesticides, and flax fiber (3).

The Agricultural Food Board was created in March 1943 under the chairmanship of the Deputy Minister of Agriculture. The Deputy Minister, testifying in June 1943 before the Standing Committee on Agriculture and Colonization, House of Commons, referred to the duties and functions of this Board, stating that one of these was -

subject to the approval of the Minister of Agriculture and in co-operation with the Agricultural Supplies Board, to develop and direct policies and measures of the Department of Agriculture for the wartime production of food. In other words, the food board is now the general presiding organization, you might say, within the department for food production programs, and in developing those programs and in implementing them it is working in close co-operation with the Supplies Board and using the Supplies Board machinery, and the Supplies Board will continue to function as it has in relationship with other agencies.

A broad and complete program for stabilizing the cost of living was inaugurated late in 1941. This covered production, import, wholesale, and retail prices and services, wages, salaries, and other income. The price ceilings that were placed on all commodities, except fresh fruits and vegetables, had the effect of setting maximum prices for most agricultural products.<sup>3</sup> Prior to October 1941, the index of the

<sup>3</sup> Ceilings were later placed on fresh fruits and vegetables.

TABLE 1.—Expenditures by the Canadian Department of Agriculture for subsidies on specified products, 1941-43

| ITEM                                       | 1941                      | 1942                      | 1943 <sup>1</sup>         |
|--------------------------------------------|---------------------------|---------------------------|---------------------------|
|                                            | 1,000<br>Canadian dollars | 1,000<br>Canadian dollars | 1,000<br>Canadian dollars |
| Dairy products:                            |                           |                           |                           |
| Cheese, quality premiums . . . . .         | 1,495                     | 1,731                     | 1,583                     |
| Cheese, export subsidy . . . . .           | 1,950                     | —                         | —                         |
| Fluid milk . . . . .                       | —                         | —                         | 3,639                     |
| Butterfat . . . . .                        | —                         | —                         | 15,032                    |
| Concentrated milk . . . . .                | —                         | —                         | 311                       |
| Milk for cheese . . . . .                  | —                         | —                         | 588                       |
| Eggs, export subsidy . . . . .             | 7                         | 918                       | —                         |
| Feeds: Feed freight assistance . . . . .   | 2,059                     | 9,832                     | 13,414                    |
| Wheat, feed drawbacks . . . . .            | —                         | 334                       | 2,246                     |
| Plan B . . . . .                           | —                         | —                         | 970                       |
| Alfalfa meal . . . . .                     | —                         | —                         | 39                        |
| Apples . . . . .                           | 1,720                     | 2,258                     | 2,000                     |
| Canning crop . . . . .                     | —                         | —                         | 305                       |
| Berries for jam . . . . .                  | —                         | —                         | 78                        |
| Sugar-beet pulp . . . . .                  | —                         | —                         | 26                        |
| Wool, quality premium . . . . .            | —                         | —                         | 4                         |
| Wheat-acreage-reduction payments . . . . . | 22,268                    | 22,298                    | 31,018                    |
| Prairie farm assistance . . . . .          | 5,151                     | 14,471                    | 1,500                     |
| Prairie farm-income payments . . . . .     | 723                       | 18,175                    | 67                        |
| Fertilizer subventions . . . . .           | —                         | 975                       | 873                       |
| Lime assistance . . . . .                  | —                         | —                         | 39                        |
| GRAND TOTAL                                | 35,373                    | 70,992                    | 73,732                    |

<sup>1</sup> Subject to revision. <sup>2</sup> Estimated.

Canadian House of Commons Sessional Paper No. 178, February 28, 1944; figures rounded. The average free rate of exchange for the Canadian dollar was 87.32 U. S. cents in 1941, 88.38 in 1942, and 89.98 in 1944.

wholesale prices of farm products had risen until there was parity between prices of most farm products and other commodities (1, p. 448).

Where the Government deemed that a fair relationship did not exist between the prices of farm products and other products, and where production was deemed essential in the war effort, it has followed a policy of making up the difference by payment of subsidies to agricultural producers and by other means. To reduce the retail prices of imported and domestic food products of widespread consumer use, the Government has resorted to reduction of excise taxes and import duties and to consumer subsidies. (For the amounts and various types of subsidies paid to stimulate production, to maintain a fair relationship between farm prices and other prices, and to stabilize living costs, see tables 1 and 2.)

The setting of price ceilings on imports inevitably creates difficulties in the purchase of commodities abroad. The Canadian Wartime Prices and Trade Board was faced with a dilemma when home supplies of consumer goods were short and the Canadian policy was to maintain a low price ceiling. When necessitous commodities were imported in large quantities, the Board set up commodity administrators that became sole importers, or granted import subsidies and priorities to private importers. The Canadian price ceilings have served to prevent the importation into Canada of many commodities available in the United States.

The Wartime Food Corporation, a subsidiary of the Wartime Prices and Trade Board's Commodity Prices Stabilization Corporation, Limited, was reorganized in December 1943 and began operations in the first part of January 1944. It has power to buy, sell, store, or otherwise deal in foodstuffs, either domestic or imported, and is thus able to overcome many of the problems involved in the wartime importation of price-controlled commodities. The objectives of the Corporation, which cooperates with private importers and the wholesale trade, are the maintenance of adequate supplies,

fair distribution, and reasonable prices to consumers with respect to fresh fruits and vegetables on which import subsidies must be paid in order to keep within Canadian price ceilings.

The War Exchange Conservation Act of September 1939 prohibited the importation into Canada of a long list of foods and other agricultural products. Imposition of a war exchange tax on all imports, except those from Empire countries, was inaugurated in 1940. The tax amounted to 10 percent of the value of the commodities imported and tended to protect Canadian producers by restricting imports, particularly from the United States and other countries of the Western Hemisphere.

The initial Canadian policy of restricting imports has been superseded, in the case of many agricultural imports needed by consumers or for the war effort, by suspension of the war exchange tax, by reductions in import duties, and by not raising barriers to imports of such commodities as fruits and vegetables under the advanced seasonal valuations for duty provisions in the tariff legislation of 1926 and 1930.

The Export Permit Branch under the Minister of Trade and Commerce exercises control over Canadian export trade to prevent actual trading with the enemy, or aid reaching the enemy, and to conserve commodities that may be needed for civilian use in Canada, for shipment to the United Kingdom, for military use, or for the production of essential goods. Export permits are required for many agricultural products. Permits have been granted for exportation of some important products to the United States, including feed grains; potatoes, in the spring of 1943, when the United States was in a deficit position; dairy cattle; and breeding stock. Since the development of a beef shortage in Canada during the summer of 1942, no shipments of beef and beef cattle to the United States have been permitted.

TABLE 2.—Expenditure by the Canadian Commodity Prices Stabilization Corporation, Ltd., for subsidies on domestic food products, 1942-44

| DESCRIPTION                     | SUBSIDY PAID               |                              | DESCRIPTION                | SUBSIDY PAID               |                              |
|---------------------------------|----------------------------|------------------------------|----------------------------|----------------------------|------------------------------|
|                                 | APRIL-<br>MARCH<br>1942-43 | APRIL-<br>JANUARY<br>1943-44 |                            | APRIL-<br>MARCH<br>1942-43 | APRIL-<br>JANUARY<br>1943-44 |
|                                 | Canadian<br>dollars        | Canadian<br>dollars          |                            | Canadian<br>dollars        | Canadian<br>dollars          |
| Butter:                         |                            |                              | Meat:                      |                            |                              |
| Butterfat . . . . .             | 10,078.6                   | 2,899.2                      | Beef, transportation . . . | —                          | 277.8                        |
| Inventories . . . . .           | 212.2                      | 370.6                        | Bologna and wieners . . .  | —                          | 100.6                        |
| Transportation . . . . .        | 24.4                       | 25.0                         | Milk:                      |                            |                              |
| Canned fruits & vegetables:     |                            |                              | Primary producers, 1941-42 | 1,982.9                    | .4                           |
| 1941 pack . . . . .             | 264.7                      | 14.0                         | Primary producers, 1942-43 | 2,172.9                    | 1,010.1                      |
| 1942 Pack . . . . .             | 1,509.1                    | 225.5                        | Consumer . . . . .         | 3,660.3                    | 17,013.6                     |
| 1943 pack . . . . .             | —                          | 512.0                        | Flin Flon, transportation  | —                          | .3                           |
| Eggs, frozen . . . . .          | —                          | 97.6                         | Rye grain . . . . .        | —                          | 9.7                          |
| Fruits, fresh:                  |                            |                              | Tea & coffee inventories,  |                            |                              |
| Strawberries, B.C. 1942 . .     | 72.3                       | 18.3                         | December 7, 1942 . . . .   | 2,682.4                    | 366.4                        |
| Peaches, Ontario, 1942 . .      | 53.0                       | 13.6                         | Vegetables:                |                            |                              |
| Tree fruits, 1943 . . . . .     | —                          | 617.3                        | Beans, white- & yellow-eye | —                          | 266.1                        |
| Groceries, Order 116:           |                            |                              | Potatoes:                  |                            |                              |
| Standard <sup>2</sup> . . . . . | 1,536.6                    | 807.2                        | New . . . . .              | —                          | 715.8                        |
| Cereal products . . . . .       | 3.7                        | 29.5                         | Transportation:            |                            |                              |
| Transportation, Gaspe . . .     | —                          | .3                           | 1943 crop . . . . .        | —                          | .4                           |
| Jam and jelly . . . . .         | —                          | 143.4                        | Old crop . . . . .         | —                          | 15.3                         |
| Maple products . . . . .        | —                          | 16.6                         | Total                      | 24,253.1                   | 25,498.8                     |

<sup>1</sup> Net receipt. <sup>2</sup> Total includes payments on some grocery items which are not food products.

<sup>3</sup> Figures indicate amount by which receipts from surcharge on exports exceed disbursements for subsidies. When operations have been completed, any excess will be distributed to the trade.

Canadian House of Commons Sessional Paper No. 178, February 28, 1944; figures rounded. During April-March 1942-43 the free rate of exchange for the Canadian dollar averaged 88.85 cents in U. S. currency; during April-January 1943-44, 89.96 cents.

Though the total amount paid for food subsidies during the fiscal year 1943-44 is not yet known, estimates (see [CANADIAN] MINISTRY OF FINANCE, HOUSE OF COMMONS DEBATES, June 1, 1944, p. 3519) indicate that subsidies and trading losses will be larger during 1944-45.

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Perhaps the most important Canadian wartime development in the field of foreign-trade mechanics was the establishment of commodity boards. These handle the purchase and delivery of products for shipment under the bulk-sales contracts with the British Ministry of Food. To facilitate trade with countries in which government procurement agencies handle imports of civilian goods, the Government has set up an Export Board under the Department of Trade and Commerce. This Board has power to buy Canadian commodities and to make direct sales to the foreign government-purchasing agencies.

OPERATIONS OF WARTIME COMMODITY BOARDS

The Agricultural Supplies Board advised the Government in its establishment of three marketing boards, created by order-in-council. The Bacon Board, established in December 1939, was replaced by the Meat Board in June 1943. The Dairy Products Board was set up in May 1940 and the Special Products Board in April 1941. These boards have the specific duty of supervising the purchase and shipment of various farm products to the United Kingdom and other United Nations pursuant to agreements made by the Canadian Government. They are consulted when new export commitments and decisions on allocation of food are made. The head of each is a member of the six-man Agricultural Food Board, so they also have a voice in the formulation of agricultural policies.

The Meat Board

Export marketing of Canadian bacon entered a new phase in the week of January 20, 1940, when the Bacon Board (now Meat Board)⁴ the first wartime board set up by the Dominion to deal with the British Ministry of Food in a specific commodity, officially assumed operations. Among the duties of the board were those of insuring regular and sufficient supplies to fill the Canadian export commitment and seeing that hog prices bore a fair relationship with the agreed-upon bacon price. The Board also arranged for price differentials between grades, looked after the actual handling of the meat, and was charged with the responsibility of regulating the marketing of bacon and other hog products to the extent necessary to fill agreements.

The Board was expected to interfere with normal trade operations as little as possible, but as time went on and Canada contracted for much larger exports the Board had to intervene. Various orders were issued regulating the distribution of pork products in domestic channels. Bacon Board Order No. 1, limiting domestic deliveries, became effective May 19, 1941. Packers were licensed by the Board on May 31, 1941, and thereafter other orders were issued further restricting the slaughter of hogs for domestic consumption.⁵ Subsequently, the Bacon Board orders were consolidated in Meat Board Order No. 1, effective July 12, 1943. This order was suspended, however, the following October, when hog marketings rose to unprecedented levels.⁶

Prices agreed upon in the Canadian bacon contracts with the United Kingdom have been higher in each successive contract except the second, in 1940-41, which specified a price of \$16.10 (Canadian) per 100 pounds, Grade A sides, as contrasted with \$17.70 in the first. The second-contract price was, however, later raised by \$2.50 in three successive advances, the cost of which was borne by the Canadian Government. At certain times the contract price has been above domestic quotations, but for a period

⁴ Additional responsibilities with respect to other meats, such as beef, were delegated to the Meat Board.

⁵ The Wartime Prices and Trade Board also issues permits to slaughterers and has marking and other rules in effect in connection with the rationing program. These regulations were not affected by suspension of Meat Board Order No. 1.

⁶ Meat rationing was suspended in Canada on February 29, 1944, when this action was said to have been taken to prevent the wastage threatened by unprecedented slaughter and a bottleneck in transportation and shipping.

in 1943 it was lower. Under the 1944-45 contract, export prices are on the basis of \$22.70, Grade A sides, an increase of 75 cents above the 1942-43 contract. Internal prices are on the same basis.

Under the bacon agreements, the British Ministry of Food pays for bacon on the basis of one flat price for all Grade A bacon with a correspondingly lower price for Grade B. The Board has made settlements with packers for sides on a graduated scale, based on grade, weight, and selection. This practice has tended to keep the value of quality to the forefront, but under the third and fourth agreements the quality of bacon declined as every effort was made to fill the contracts.

A new subsidy program became effective in January 1944, under which the objective of the Dominion Department of Agriculture is to market in 1944, as nearly as possible, the same number of hogs through regular commercial channels as in 1943. Producers who market through inspected slaughterers are paid a premium of \$3.00 per head on hogs of Grade A, and \$2.00 per head on Grade B-1.⁷ This policy is expected to offset higher producing costs and also to improve the quality of Canadian bacon.

The Dairy Products Board

The Dairy Products Board has responsibilities and powers similar, on the whole, to those exercised by the Meat Board. An Order-in-Council of November 1941, however, gave the former broader economic power by authorizing it to buy and store butter in order to support prices. It has issued orders restricting the marketing of cheese in order to divert a larger amount to the United Kingdom. Early in the summer of 1941, and again in 1943, the Board ordered that all the cheese produced in Ontario and Quebec be diverted for export to the British Ministry of Food. Since these two Provinces produce some 90 percent of the total Canadian output, these orders, effective respectively from May 26 to October 31, 1941, and from June 1 to December 22, 1943, curtailed domestic distribution materially, thus providing more cheese for export.

Canadian cheese production has been highly subsidized during the past 4 years. Such subsidies have been paid for various purposes: To improve quality, to effect the diversion of milk into manufacturing channels, and to supplement market or contract returns. The comprehensive subsidy programs for 1943-44 and 1944-45 covering dairy products have increased the incomes of dairy farmers appreciably without threatening the price-control program.

In addition to the premiums paid under the Cheese and Cheese Factory Improvement Act, 1939, the Dominion Government has paid premiums on cheese sold to the British Ministry of Food, and the Provinces have paid substantial cheese subsidies. Ontario has been paying 2 cents per pound on cheese manufactured from milk produced within the Province since February 1941. A similar amount was paid by Quebec on cheese of 92 score and over from May 1941 through November 1942, when it was suspended. Payments were resumed, however, on July 1, 1943. These premiums have promoted an improvement in cheese quality while also supplementing both domestic and contract prices.

The second cheese contract (April 1, 1941, to March 31, 1942) provided for a price of 14.4 cents as compared with 14 cents in the first agreement. The contract price was supplemented, however, by a special subsidy at first of 0.6 cent and later of 1.6 cents per pound, paid by the Canadian Government. The next contract stipulated a price of 20 cents, or 4 cents above the final price under the second agreement. This higher price, plus the Dominion and Provincial payments, upset the usual price

⁷ Under the Cheese and Hog Subsidy Act, effective May 5, 1941, the Province of Ontario has been paying a bonus of \$1.00 for Grade A and 50 cents for B-1 hogs. Other Provinces have paid quality bonuses for varying periods and under certain conditions (9, p. 90).

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relationship between butter and cheese, with the result that the Canadian Government decided to pay a subsidy on butter. Since 1942 subsidies have been ranging from 6 to 10 cents per pound on butter, from 20 to 30 cents per 100 pounds on milk used in the manufacture of cheese, and since 1943, 30 cents on milk to be concentrated, and 25 to 55 cents on fluid milk.

#### Special Products Board

The principal function of the Special Products Board has been the handling of problems involved in the negotiation and fulfillment of the egg agreements with the United Kingdom. It has sections for handling poultry products and such commodities as fruits and vegetables, flax fiber, field and vegetable seeds, and certified seed potatoes (3). The Poultry Products Section has helped negotiate contracts for shipment of eggs to Britain and has handled the purchase and export of the eggs. In April 1944, a new egg contract, concluded with the British Ministry of Food for a 2-year period, was announced. It provides for an annual delivery of a minimum of 7,500 long tons (8,400 short tons) of powdered eggs, equivalent to 48 million dozen shell eggs. Britain is allowed to take 18 million dozen as shell eggs during 1945. At times the Board's buying price has acted as a floor in the egg market. A subsidy of 3 cents per dozen on Grade A eggs was paid from December 1941 to September 1942. The Board also has supervised the development of dehydrating facilities so that eggs could be shipped to Britain in the dried form. Wartime shipments of poultry to Britain have been of minor importance, although chickens and turkeys were sent over in some volume last Christmas.

#### Wheat Board

The Canadian Wheat Board, formerly a voluntary marketing organization created at the request of farmers who had seen their cooperatives run into grave financial difficulties in the early 1930's, controls wheat marketing from producer to consumer and foreign buyer. Its three major functions are delivery control, price regulation, and sale of wheat in domestic and export channels, but its powers have been extended to include supervision also of the marketing of feed grains, flaxseed, and other oilseeds. Domestic and export sales of these products currently are controlled in varying degrees by the Board.

In 1940, a further amendment of the Wheat Board Act rescinded the 5,000-bushel limitation on wheat deliveries to the Board and provided that no person could deliver wheat, oats, or barley to any country elevator, loading platform, mill, or terminal elevator without a permit from the Wheat Board. Deliveries were recorded in each farmer's permit book. For the 1940 crops, the quotas were a specified number of bushels per seeded acre, until this limitation was canceled the following spring, with heavy penalties provided for any violation.

Threatened overtaking of storage facilities led to rigid restriction of deliveries from the 1941 and 1942 crops. Wheat deliveries for all Canada were limited to 230,000,000 bushels from the 1941 crop and 280,000,000 bushels for western Canada from the 1942 crop. The individual quotas were based on a specified number of bushels per authorized acre, that is, the acreage entered in the farmer's permit book. This acreage was adjusted to 65 percent of the 1940 acreage. Quotas also have been imposed intermittently on deliveries of feed grains, the movement of the 1942 and 1943 crops being so regulated, but flaxseed deliveries during 1942-43 and 1943-44 have not been restricted. In practice, the Board has increased quotas per acre, or removed them, as rapidly as storage facilities and demand have warranted.

During the first few years of operation, wheat offerings by the Board were timed insofar as practicable so as not to depress the market unduly. The Board generally followed the practice, however, of selling the wheat for what it would bring and absorbing any resultant loss when the crop was sold below aggregate advances to farmers. At times, both internal and external sales were below the cost "price" to the Board.

Within the last year, the Board has evolved a new price policy. Declaring that it was desirable to afford greater certainty to farmers as to prices for the remainder of the 1943-44 marketing year and all of 1944-45, the Government last September ordered the discontinuance of wheat trading on the Winnipeg Grain Exchange and authorized the Wheat Board to purchase all commercial wheat, not already under contract, at 90 cents (Canadian) per bushel. For wheat delivered since September 28, 1943, an advance payment of \$1.25 per bushel, basis No. 1 Northern, Fort William-Port Arthur, is made by the Board to producers.

Shipments under the 1-billion-dollar Mutual Aid Act of 1943, chiefly to the United Kingdom and Russia (5, p. 5), are not regarded as commercial sales, and no public announcement has been made of the bookkeeping price at which the transfers are made. All countries buying wheat commercially from Canada, including the United States, pay the same price, which recently has been \$1.45 (Canadian currency) per bushel on the basis of No. 1 Northern (5, p. 5).

Permits for export of oats and barley must be obtained from the Canadian Wheat Board.<sup>8</sup> When feed-grain prices advanced sharply in the United States early in 1943, the exportation of Canadian grains over the duty became profitable. Since internal prices could not rise above the ceilings, the Canadian grower could not reap the advantage from the higher net prices obtainable on sales for export to the United States. Accordingly, a system of export equalization fees was put in effect to capture this profit. The fees were intended to be roughly equivalent to the difference between the duty-paid delivered price in the United States plus the usual trade handling charge and the price prevailing in the United States at time the permit was requested.

The fees collected on such export sales were pooled and paid to producers on the basis of deliveries made between April 1 and July 31, 1943. For the 1943-44 crop year the Canadian Government has provided bonuses to farmers as an advance against participation payments from the equalization-fee pool. The bonus on oats is 10 cents per bushel and on barley, 15 cents, when these grains are sold off the farms.

The Wheat Board also has had complete control of the purchase and sale of flaxseed since March 1942, when the Board was empowered to take over all unsold stocks in Canada; futures trading was stopped, and the Board was designated the sole flaxseed purchaser from producers. The Government fixed flaxseed prices at \$2.25 per bushel (Canadian) for 1942 flaxseed and in the fall of 1943 set a price of \$2.50 per bushel, retroactive to August 1, 1943. A price of \$2.75 for 1944 flaxseed was announced in February 1944. The Board has continued to sell flaxseed to domestic mills at \$1.64 per bushel, the basis for the linseed-product ceilings in Canada. Export prices are negotiated by the Board, and the profits obtained on sales to crushers in the United States are used to offset losses on internal transactions.

#### POST-WAR PROBLEM OF PRICES AND SURPLUSES

Just as the primary agricultural problem during the war has been to produce enough food to meet wartime requirements, the foremost post-war problem, as far as Canadian agriculture is concerned, will be to maintain a market for Canadian-produced

<sup>8</sup> In March 1942, the Board was authorized to purchase certain grades of barley and oats, effective August 1, 1942, in order to assure minimum prices for these grains.

commodities and to prevent the collapse of prices received by farmers. Canadian post-war policy will probably be influenced by the possibility that the increased production of such products as bacon and cheese will have results similar to those experienced by the farmers with respect to wheat and certain other commodities after World War I.<sup>9</sup> The British Ministry of Food is now taking, at negotiated prices, all the surplus cheese, eggs, pork, and beef that Canada can ship. Since British requirements for these commodities will presumably be reduced after the war, future measures for safeguarding Canada's position in the post-war British market and for otherwise disposing of possible surpluses are being sought. The demand in Europe and Asia for food to carry out the United Nations relief program is expected to provide some outlet but only for a limited time. A post-war nutritional level in Canada above that of the present, or the pre-war period, would call for substantially larger quantities of eggs, dairy products, meats, vegetables, and fruits and might perhaps eliminate the problem of a surplus in the case of dairy products and certain fruits and vegetables. Furthermore, after the relief period has terminated, the hope is that the aggregate consumption of foodstuffs may be increased through higher nutritional standards in other parts of the world as well as in Canada.

The Advisory Committee on Reconstruction cautions that a policy directed toward maintaining prices of all commodities by means of governmental subsidy would inevitably retard the attainment of a freely functioning price system and jeopardize the whole reconstruction policy. It expressed the view, however, that necessity might in some cases force governments to take action to prevent the accumulation of surpluses and a consequent slump in prices.

Late in 1943, the Prime Minister of Canada made a statement in which he said that the Government recognized that farmers were anxious about their post-war prospects and that they did not want to face a disastrous fall in farm prices within a year or two after the war. He continued as follows (2):

If, to help win the war, farmers are asked to accept a ceiling on prices, we believe they are entitled to a floor under prices to insure them against an agricultural depression after the war. As an essential part of its post-war policy the Government intends to ask Parliament, at the next session, to place a floor under the prices of the main farm commodities.

That government action tantamount to price guarantees may be expected to persist in Canada for some time after the current war ends is evidenced by recent action of the Canadian Government in guaranteeing farmers a price of \$1.25 (Canadian currency) per bushel for 1944 wheat and of \$22.50 for bacon produced in 1945. The development of wheat marketing under the Wheat Board would seem to forecast a program for guaranteeing minimum prices for what is normally Canada's most important farm export. Moreover, the price-incentive program has been used for a number of other commodities during the past 4 years. Some of the premiums and subsidies on high-grade products may be continued in their present, or some modified, form. Announcement has also been made that negotiations have been proceeding to extend the period of the bacon contract to the end of 1947, in order that Canadian hog producers in planning for their future production may be assured of a market. There are indications that contracts for delivery of certain other commodities to the United Kingdom at specified prices may give assurances to producers in the post-war period.

#### INTERNATIONAL COOPERATION IN MATTERS AFFECTING AGRICULTURE

Not only has the Canadian Government worked closely with the United Nations on all the broader economic problems arising from the war and the approaching post-war

<sup>9</sup> BOOTH, J. R. CANADIAN AGRICULTURE IN THE POST-WAR PERIOD. Address before the National Dairy Council, Toronto, October 28, 1941. 10 pp., 111us. [Micrographed.] See p. 6 and also (7, p. 8).

period, but it has also cooperated wholeheartedly with the United States on Agricultural questions of mutual concern. Secretary Wickard stated last January in his greetings to farmers across the border in Canada that "the exemplary spirit of cooperation which has characterized relations between our two countries for more than a century has reached a new high level during the war years."

The two Governments have worked effectively together within the framework of the Combined Food Board and the United Nations Relief and Rehabilitation Administration in ascertaining consumption levels, requirements, and supplies of food. Members of the joint Standing Agricultural Committee and other officials set up programs directed toward making the agricultural resources of the two countries the means of supplying increased mutual aid to each other. The interchange of agricultural labor and machinery, the expanded production of vegetable oils in Canada, and the movement of Canadian grain to producers of livestock and poultry products in the United States are the fruit of such planning.

By the Wheat Agreement, which became effective in June 1942, Canada undertook to cooperate in providing wheat for relief in war-stricken and other necessitous areas of the world, where circumstances in the view of the parties to the agreement made such relief practicable. In order to prevent disorganization and confusion immediately after the war and pending the conclusion of a comprehensive international wheat agreement, the Memorandum initialed at the last session of the meetings further provided for bringing into operation for a limited period the provisions of the Draft Convention prepared at the meetings with respect to stabilization of prices and the maintenance of an adequate wheat supply. The parties to the 1942 wheat arrangement expressed the objective in the preamble of the Draft Convention (11, p. 5):

The benefits of abundant world supplies of wheat cannot be assured to consumers unless there is a substantial decrease in uneconomic incentives to high-cost production, a lowering of barriers to world trade and the charging of prices to consumers not substantially higher than the price of wheat in international trade.

Canada has also played an important role in the establishment of an international organization on food and agriculture. In a Memorandum<sup>11</sup> presented at the Hot Springs Conference, the Canadian delegation said:

The experience of the period between the two wars has shown unmistakably that purely national approaches to the problems arising from the production and distribution of agricultural products cannot be successful, except in rare instances. The problems themselves are international and in many of their aspects international treatment alone can deal adequately with them. Attempts to promote a balanced world agriculture in conformity with progressive improvement in standards of consumption require a suitable framework of international policies based on a careful survey of all the interests affected, but if international cooperation is forthcoming and due regard is given to the interests of all countries the internal problems of each nation may be greatly simplified.

Canada has actively participated in the work of the Interim Commission on Food and Agriculture in building the United Nations permanent organization for food and agriculture. It supplied both the chairman of the Commission and experts on economic and scientific panels.

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By Victor B. Sullam\*

*The agriculture of Northern Libya is a combination of intensive irrigated farming, extensive cultivation of grains, and migratory husbandry. Perennial crops, such as dates, olives, almonds, and figs, predominate over the few field crops (barley, wheat, and vegetables). Sheep, goats, and camels are the main types of livestock.*

*Between 1940 and 1943, military operations seriously damaged the productive capacity of Northern Libya. Part of the irrigation facilities were destroyed and much of the livestock slaughtered. Inflation and hoarding of crops are further impairing the present-day economy of the area.*

### TOPOGRAPHY AND SOILS

The system of plateaus and tablelands which comprises much of the Sahara Desert is continued into Northern Libya<sup>1</sup> by two highland regions (Gebels):<sup>2</sup> The Black Gebel or Gebel Nefusa in Tripolitania and the Green Gebel or Gebel el Achdar in Cirenaica. Between the foot of the Gebel and the shore there remains in Tripolitania a triangular plain known as Gefara, stretching from the Tunisian border to Garabulli. There the Gebel reaches the coast; plains reappear only south of Misurata, where, however, much of the expanse is occupied by the marshes (*Sebchet*) of Tauorga. In Cirenaica the coastal plains comprise only a small area around Bengasi and, beginning at Tobra, where the mountains reach the shore, become a narrow coastal fringe often ill-suited to agricultural exploitation.

The Gebel el Achdar comprises two embankments, between which at nearly 1,000 feet above sea level, lies the plateau of Barce, 62 miles long and 12 miles wide, which from ages past has been one of the main centers of colonization and settlement. A second plateau, equal in size to the first, is in the upper part of the Gebel, between 1,600 and 2,000 feet (13).<sup>3</sup>

The soils of Northern Libya are generally poor in organic matter and in plant nutrients. Light sandy soils 30 to 40 feet deep predominate along the coast of Tripolitania; these soils retain some moisture even in the driest years and are comparatively well suited to dry farming. Heavier soils predominate in the Gefara and on the Gebel, where desert sand, carried by the winds, is mixed with reddish clay. Though comparatively richer in plant nutrients than the sandy soils, these soils cannot be worked in dry years. Here and there are banks of limestone and, along the coast, marine dunes and salty marshes wholly unsuited for agricultural exploitation.

\* Office of Foreign Agricultural Relations.

<sup>1</sup> The former Italian colony of Libya is divided into three parts: Tripolitania, Cirenaica, and the Southern or Sahara Territory. The first two (213,876 square miles, 800,000 inhabitants) are at present under British Military Administration; the third (465,482 square miles, 50,000 inhabitants) is under the Free French. This article deals only with Tripolitania and Cirenaica.

<sup>2</sup> In the spelling of Arab and Berber names, preference has been given to the forms used in Italian sources.

<sup>3</sup> Italic figures in parentheses refer to Literature Cited, p. 168.

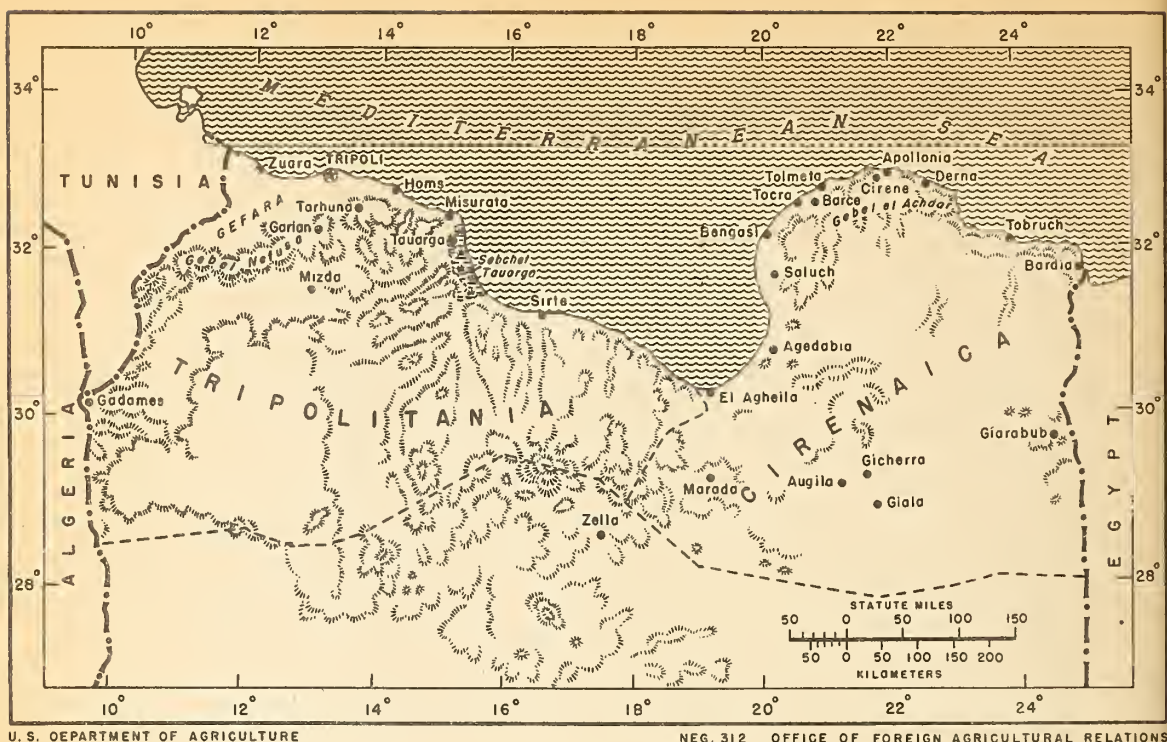


FIGURE 1.—Geographic Map of Northern Libya.

The tablelands of Cirenaica are covered by Terra Rossa, the typical lateritic soil of the Mediterranean regions.<sup>4</sup> On the upper plateau Terra Rossa alternates with a gray-black clay, rich in humus, which to the east forms a continuous cover, whereas in the west it has been carried into the lowlands. East of Benghazi lies a bank of limestone, interrupted in a few sheltered spots by isles of Terra Rossa. The southern and eastern slopes of the Gebel are altogether barren.

#### CLIMATE

Most of Northern Libya partakes of the climate of the desert; a Mediterranean climate exists in Tripolitania only where the Gebel comes very close to the sea, whereas in Cirenaica a middle-mountain climate appears around the Green Gebel. In no part of Tripolitania does the annual average rainfall exceed 16 inches, and only a narrow triangle extending from Tripoli to Homs and southward to Garian receives more than 12 inches. Cirenaica fares better. There in a narrow ellipse surrounding the Gebel plateaus, rainfall surpasses 16 inches; and at Cirene, which Herodotus, for once truthful, called the city of the "perforated sky," it averages over 24 inches.

Rainfall varies greatly from year to year, ranging in Tripoli from 6.5 (1915) to 29.8 inches (1894), and in Cirene from 4.7 (1915) to 53.1 (1924) (4). The months of heaviest rainfall are usually December and January; June, July, and August are normally rainless. Precipitation is often in the form of short, violent storms, sometimes surpassing 3 inches per day.

<sup>4</sup> According to Principi (8), the Terra Rossa of Barce closely resembles, from a chemical standpoint, the Karst soils of Istria, but its origin is different.

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Rainfall between December and February corresponds in Tripolitania to that of Sicily and Apulia, but fall and spring precipitation is much below that in Italy. With only one-fifth of the annual rainfall in the all-important growing months of February and March, most of the annual precipitation cannot be utilized by the crops. Conversely, in the highlands of the Green Gebel 70 to 100 rainy days insure a favorable distribution of rainfall over the growing season of barley and wheat (10). The coastal regions of Libya have warm summers and mild winters, the yearly range of temperatures being about 57° F. in Tripoli and 55° in Bengasi.

The moderating influence of the sea is hardly felt inland. Though El Azizia is only 25 miles from the sea, summer temperatures surpass 120° F., and winter temperatures go below the freezing point. At Garian, where the July temperature averages 80° F., winter snows are not rare. Daily variations in temperature reach, even on the coast, 35° F., thus greatly limiting the range of crops. The rains that begin in September, accompanied by warm winds, often cause a second blossoming of fruit trees, with harmful effects upon production.

Winds are strategic factors by themselves; in the summer months the cool northwestern, laden with salt and iodine, breaks the limbs of trees and burns the leaves; whereas, beginning in the spring, the Ghibli, a hot wind that blows for whole days from the desert, greatly impairs agricultural production. Exceptionally high temperatures, excessive dryness, and a velocity of from 40 to 50 miles per hour characterize the Ghibli, which prevents the hardy olive from thriving in the southern Gefara.⁵

While, from the standpoint of climate, Libya is not a Mediterranean country, it is also not a tropical region. It is thus not suited to crops that require summer rains.⁶ In Tripolitania, only those crops can thrive that are able to withstand the daily fluctuations in temperature during the winter and the rainless summers; their growing season must also be largely in Ghibli-free months. In Cirenaica, conditions are generally more favorable, but along the coast not even the almond can withstand the violent northwesterner.

WATER SUPPLY

From time immemorial, the inhabitants of Northern Libya have been confronted with the problem of overcoming the hostile climate by insuring an adequate water supply for man, beast, and crops. Practically all watercourses of the region are dangerously swollen torrents in the winter and dry or almost dry during the summer. The nature of the soil does not permit the construction of large artificial reservoirs.⁷ Small and large tanks for the storage of winter rains stud the plains and highlands of Cirenaica; they were the main sources of water for the settlements of antiquity.

More than 160 springs contribute materially to the water supply of the highlands of Cirenaica; the most important one is the fountainhead of Ain Mara, on the eastern part of the Green Gebel, whose waters are carried to the western settlements through a 124-mile aqueduct. Tripolitania has but few springs. Somewhat exceptional is the spring of Tauorga with a flow of 925 gallons per second (6, pp. 122-126).

The agricultural economy of Tripolitania is based upon underground waters, which give this section a comparative advantage over Cirenaica. An upper pressureless water table, lying at a depth of 16 to 130 feet from the surface is exploited in the

⁵ According to Vöchting (13): "Conversely, only the Ghibli brings the dates to maturity."

⁶ On the other hand, with irrigation, such crops as peanuts and China grass may be grown.

⁷ Authorities are now in general agreement that the remains found on both Gebels were left from results of flood-control rather than from irrigation works (13).

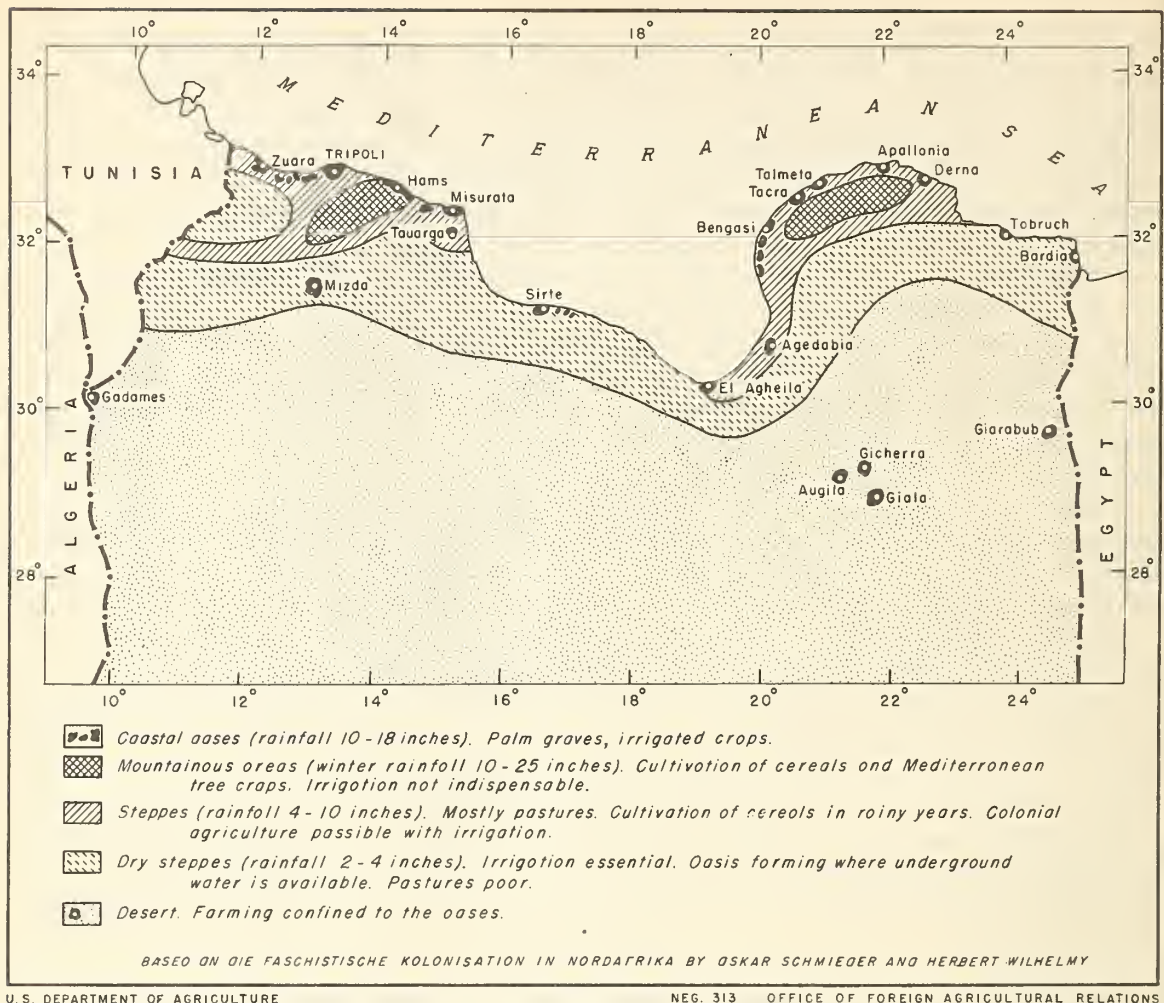


FIGURE 2.—Economic Map of Northern Libya.

oases through 30,000 wells.⁸ To increase the water supply the Italians have drilled some 800 wells, tapping a second, somewhat lower water table.

A third artesian water table has been ascertained extending from the Tunisian border to Homs. This table lies at a depth of no less than 1,200 feet; its tapping has been made possible only through government subsidization. The temperature of the water averages 86° F., and its high mineral content⁹ forbids its utilization for drinking purposes. Its use for irrigation may involve some danger, to which, however, the Italian experts gave but little consideration.¹⁰

⁸ On the average, one well serves for the irrigation of 100,000 square feet.

⁹ Chlorine 1.2, calcium 0.27, magnesium 0.1 parts per thousand.

¹⁰ The whole colonization program undertaken by the Fascist regime seems to show little concern about long-time developments. Even as eulogistic a writer as Schmieder is compelled to question the advisability or wisdom of a number of practices, such as dry farming.

TYPES OF FARMING

Over a small productive area, Northern Libya assembles a variety of farm enterprises that are the result not only of differences in natural environment but also of ethnic and institutional factors. Cultivation and animal husbandry, as practiced by the natives, with the sole aid of their ingenuity and experience, differ markedly from the agricultural undertakings of the Italians, which were greatly subsidized by the Government. Even where crops are practically the same for both groups of farmers, farming practices differ sharply. (See table 1.)

Native Agriculture

According to the 1936 census (5), the native population of Northern Libya totaled 702,686 individuals of whom over one-sixth had no permanent residence ("nomads" and "quasi nomads").¹¹ Seventy-two percent of the gainfully employed were engaged in agricultural pursuits.

The foundation of native agriculture is furnished by some 100,000 acres of oases, clustered along the coast and scattered inland.¹² Here the Bahr el Teht - the underground sea - and a few springs permit the irrigation of some 70 percent of the land. The date palm, standing, as the natives say, with "her feet in water and her head in the sunshine" is the foremost resource of the oases. The dates constitute a staple food of the natives, and their pits, when ground, can be fed to livestock. Beverages are obtained from the fermentation of the sap (palm wine or *Legbi*) and of the dates themselves (date brandy or *buca*). The leaves are used as roofing material and in rope making. Finally, the trunk yields lumber and firewood.

TABLE 1.—Acreage and production of specified commodities grown in Northern Libya by settlers and natives, 1938

| COMMODITY | ACREAGE | | | PRODUCTION | | |
|-------------------|--------------|--------------|--------------|----------------------|----------------------|----------------------|
| | SETTLERS | NATIVES | TOTAL | SETTLERS | NATIVES | TOTAL |
| | <i>Acres</i> | <i>Acres</i> | <i>Acres</i> | <i>1,000 bushels</i> | <i>1,000 bushels</i> | <i>1,000 bushels</i> |
| Wheat | 74,733 | — | — | 874 | 374 | 1,248 |
| Barley | 17,424 | — | — | 170 | 2,449 | 2,619 |
| Oats | 3,217 | — | — | 53 | — | 53 |
| Corn | 188 | — | — | 3 | 10 | 18 |
| | | | | <i>Sh. tons</i> | <i>Sh. tons</i> | <i>Sh. tons</i> |
| Tobacco | 1,952 | — | — | 724 | 247 | 961 |
| Almonds | 17,251 | — | — | 421 | 111 | 532 |
| Citrus | 1,006 | — | — | 1,817 | 1,101 | 2,918 |
| Dates | — | — | — | 151 | 23,579 | 23,730 |
| Olives | 16,786 | 49,212 | 65,998 | 1,439 | 15,951 | 17,390 |
| Grapes | 17,676 | 1,991 | 19,667 | 12,749 | 1,566 | 14,315 |
| Wool | — | — | — | — | — | 1,703 |

Compiled by the Office of Foreign Agricultural Relations from official statistics.

Among the palm stands are incredibly small patches of land, on which the natives raise vegetables (peppers, onions, tomatoes, and garlic), barley, sorghum, corn, wheat, and alfalfa. On the fringe of the oases, barley and wheat become rain-sown crops.

¹¹ Though these terms are used in official statistics, there are no true "nomads" in Northern Libya but mere migrant shepherds who exploit the lowland pastures in the winter and the highland ranges in the summer (3, p. 774).

¹² Estimates of the total acreage of the oases vary considerably; the most acceptable figures indicate 90,000 acres in Tripolitania (12) and 10,000 acres in Cirenaica (13).



FIGURE 3.—Irrigated olive tree.

In many spots along the coast, but principally on the Gebel Nefusa, the olive takes the place of the palm as the leading farm enterprise. Though able to withstand long droughts, the olive benefits greatly from irrigation, which increases yields fivefold and renders the tree capable of bearing fruits 6 years after planting.¹³ Olive growing as carried on by the natives, is a primitive undertaking. Even irrigation consists mostly of digging a hole around the tree in which to let the rain collect. Olives

are pressed in underground chambers with machinery that shows no improvement over the devices used by the Greeks and the Romans. In more favored spots almond and fig trees are also grown. The bulk of the cereals (mostly barley) are cultivated in an extensive way, without irrigation. If the fall rains have insured sufficient moisture, the soil is broken with a wooden plow, and barley or some durum wheat, is sown. Yields are usually low. In dry years, little more than the amount sown is harvested.

Throughout Northern Libya, but more particularly in Cirenaica, migratory animal husbandry is the main source of income for the natives. It is practiced mostly by the Arab shepherds, though many cultivators of the Gebel also own flocks and herds. The migrant shepherds move continually from the steppes of the coast to the mountain pastures, seeking grazing grounds for their livestock. Here and there some barley is sown in the fall to be harvested in the spring, when the herds move back to the uplands.¹⁴

The most cherished possession of the native is the dromedary, which can be used both as a draft and a pack animal. It yields milk (about 10 pounds per day) and hair (4 to 5 pounds per head). Its meat is as popular as beef or veal. The hump yields 15 to 20 pounds of fat. Valuable leather is obtained from the hide. The odorless slow-burning dung is an important substitute for firewood. (See table 2.)

Sheep raising is the most important animal enterprise. The most prevalent breed is the hardy multiple-purpose Barbary sheep. Wool production averages 5 to 6 pounds per head¹⁵ with great variations as to fineness. Adult animals weigh about 140 pounds.

¹³ Even brackish water can be used to irrigate the olive. The oil yield, however, is lowered by irrigation from 25 or 26 percent to 16 or 18 percent (11 and 13).

¹⁴ Italian colonization has wrought much damage to native animal husbandry. First the struggles between the ruling power and the natives caused great losses in the livestock population (1923-35). Second, much of the range land was assigned to Italian settlers for agricultural exploitation. Finally, the forest-protection measures enforced along the Green Gebel greatly reduced the area available for grazing. Partly to offset the evil effects of colonization, the Italians established several permanent agricultural settlements for the displaced nomads.

¹⁵ Greasy base; yields of washed wool are less than 40 percent as much.

Milk production, exclusive of the amount fed to lambs, is about 30 pounds per head per year. Most of the milk is processed into sour butter or *manteca* (2).

Goats are also of the Barbary breed and are kept mostly for milk and hair production, because the natives do not like goat meat. The milk that has been skimmed for making *manteca* is a popular beverage.

TABLE 2.—Livestock numbers in Northern Libya

| ITEM | HORSES | MULES | ASSES | CAMELS | CATTLE | SHEEP | GOATS | SWINE |
|----------------------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|
| ITALIAN FARMS ¹ | <i>Number</i> | <i>Number</i> | <i>Number</i> | <i>Number</i> | <i>Number</i> | <i>Number</i> | <i>Number</i> | <i>Number</i> |
| Tripolitania | 1,110 | 1,180 | 521 | 380 | 2,379 | 10,592 | 1,178 | 994 |
| Cirenaica | 936 | 119 | 216 | 212 | 5,335 | 62,610 | 8,021 | 713 |
| Total | 2,046 | 1,299 | 737 | 592 | 7,714 | 73,202 | 9,199 | 1,707 |
| ALL FARMS ² | | | | | | | | |
| Tripolitania | 8,900 | 3,774 | 23,900 | 61,900 | 33,700 | 367,300 | 295,800 | 565 |
| Cirenaica | 3,998 | 239 | 15,900 | 24,499 | 35,900 | 509,587 | 408,700 | 1,500 |
| Total | 12,898 | 4,013 | 39,800 | 86,399 | 69,600 | 876,887 | 704,500 | 2,065 |

Compiled by the Office of Foreign Agricultural Relations from ANNUARIO STATISTICO DELL' AGRICOLTURA ITALIANA (1936-38). ¹ April 21, 1937. ² December 31, 1938.

The native or Iberian cattle are ill-kept, chronically underfed animals. Calves, in particular, suffer from the natives' bad practice of consuming most of the limited milk supply. Heifers are bred only in the third year. Calves are slaughtered at 2 years of age, when their live weight averages 330 pounds. Adult cows reach weights of 550 pounds and fat steers, 770 pounds. Net meat yields range from 50 to 60 percent of the live weight. Milk production averages about 2,000 pounds per head during the lactation period, the total length of which seldom exceeds 200 days (9).

Among the equine animals the small burro (about 3 feet high) is an amazingly strong beast of burden. Neither mules nor hinnies are commonly raised by the natives, who intensely dislike sterile animals. The excellent native horses form the only bright spot in a husbandry that is otherwise too primitive.



FIGURE 4.—Native herds at pasture.

No improvement of Libya's livestock enterprises can be anticipated without first stabilizing the feed supply and providing better and more secure watering facilities. The 1936 drought, which reduced the sheep population of Tripolitania from 1,500,000 to 300,000 head, is a good example of the dangers that chronically threaten Libya's main resource.

Italian Farming

Since the oases and the more productive spots in the highlands are the cornerstones of the native economy, Italian farmers could settle only on less favored lands. Furthermore, the parceling of native holdings is so high and the tenure relations are so complex that clear title could scarcely be obtained to any but state-owned land (Public Domain).¹⁶ In the beginning of colonization, land grants were made in tracts ranging from family-sized holdings to very large estates (over 30,000 acres). After some experimenting with long-term leases, grants were made upon payment in cash of half the purchase price (about \$1.00 per acre), with the remainder to be amortized over a long period of time. Most of the grantees were and still are capitalistic entrepreneurs who operate their farms with native labor.

The so-called peasant colonization of Northern Libya consists in the resettlement of Italian farmers on special projects developed and supervised by State Corporations (*Enti di Colonizzazione*). These are developed in Cirenaica on the Gebel plateaus and in Tripolitania on marginal land made more productive by tapping the artesian water table.

At present one may recognize three main types of Italian farming practiced both by the grantees and on resettlement projects. The first, found in the outskirts of urban centers, is essentially based upon electric-powered irrigation. It consists in the production of vegetables and citrus and deciduous fruits, together with some extensive dairy or poultry farming. Some cereals are raised for household consumption. Farming practices and techniques do not differ to any great extent from those of Italian farmers in the coastal regions of southern Italy, in Sicily, and in many parts of the United States. A few cattle of the Podolian type are raised as draft animals. Alfalfa, which yields up to 12 cuttings per year, is the principal feed crop.

On the Gebels the Italians have developed a typically Mediterranean agriculture. In the more favored spots most of the land is in wheat (mostly durum but some early varieties of soft wheat), which alternates with fallow or a horsebean crop, the remainder being in olives and almonds (7). More frequently olives, figs, and grapes, which produce a high-alcohol, poor-quality wine, dominate, all field crops becoming secondary enterprises. Once the trees are grown, only such field crops can be raised as can utilize the narrow strips between rows. These are largely the typical legumes of southern Italy and Sicily — lupines, horsebeans, and chickpeas. Black vetch and oats, utilized both green and as silage, are the main sources of fodder.

In the reclaimed steppes, the water supply does not allow the cultivation of very demanding crops. Only those plants can be grown that require watering at planting time (light tobacco and flax for seed), or those, such as early soft wheat of the Mentana type, that can be rescued from the drought by means of an emergency, overhead irrigation (1). A thornless variety of pricklypear furnishes most of the fodder.¹⁷

¹⁶ When Italy conquered Libya from Turkey, the Public Domain covered some 22,000 acres. A broad interpretation of old Muslim laws, according to which all tracts without buildings or tree stands were considered public property, together with confiscation of land owned by the rebels and finally of practically all idle land resulted in an expansion of the Public Domain to about 2,000,000 acres.

¹⁷ Whether or not the resettlement projects of the steppes could become solvent is a debatable question. Part-time employment in public works greatly contributed to the income of the settlers.

EFFECTS OF THE WAR UPON THE AGRICULTURAL ECONOMY

Since 1940, the tides of war have repeatedly surged over Northern Libya. Between 1940 and 1942, practically all Cirenaica became a battlefield, whereas after El Alamein the victorious British Eighth Army chased the Afrika Korps from Tripolitania into Tunisia. Even those sections of Northern Libya where fighting was less severe had been bled white by the demands of the blockaded Axis armies.

Though the effects of war upon the agricultural economy of any one country are obviously dependent upon the structure of the agricultural production plant, what has been observed in Northern Libya gives at least a general pattern that has some equivalent in other countries. Irrigated farming practically collapsed under the impact of aerial and mechanized warfare. Power stations, being important legitimate targets, were soon crippled beyond repair. The Germans, though not carrying on a systematic scorched-earth policy, damaged or sabotaged many pumps. Even the watering systems on native farms were destroyed when tanks and trucks smashed the irrigation ditches. Farm trucks and tractors were taken by the Germans and then lost on the battlefields of Tunisia.

The recovery of irrigated farming is slow and painstaking. This year not more than 4,000 acres of grains are grown under irrigation in Tripolitania, which once had 16,000 acres of irrigated fields. Orchards and vineyards have also suffered considerable damage as indicated by low output of olive oil and wine in what should have been a favorable year.

Dry farming has withstood the impact of war much better than the irrigated enterprises. Once peace and order were restored, the natives were able easily to resume their daily work. With a favorable fall season, Tripolitania has this year more land in grains than at any other time in this century.

Both native and Italian animal husbandry have suffered tremendous losses, which, however, are only indirectly connected with actual fighting. The animal population of Northern Libya had continued to increase, war and blockade notwithstanding, until the summer of 1941, when the Germans, badly needing meat and hides, engaged in large-scale slaughtering. Estimates indicate that Tripolitania lost about a third of its cattle and over half its sheep and goats. Camel numbers, already depleted by requisitions for the Italian Army, may now amount to not more than a third of the pre-war total.



FIGURE 5.—Dry farming in Northern Libya.

Two additional features are outstanding in the present economy of Northern Libya. First is the attachment of farmers (native or settlers) to their soil. Even Italian settlers returned to their homesteads within 2 weeks after occupation. Though their titles to both land and the crops appeared uncertain and the native population was once again hostile, nothing could keep the settler away from his fields.

Second, even such a primitive agriculture as that of Northern Libya underwent the evils of hoarding, black markets, and inflation that plague French North Africa and liberated Italy. Here, too, the collapse of the distribution system worked to increase food shortages in urban centers. An occupying Army through its own troops and through badly needed emergency-rehabilitation expenditures greatly increases the amount of money in circulation. A too-favorable rate of exchange between the currency of the invading armies and local money merely accelerates the inflationary process. Farm producers, becoming aware of the dwindling purchasing power of the currency, refuse to part with their crops. Thus, in the relief and rehabilitation of occupied countries nothing appears to be more important than a stable currency and an effective system of price control.

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